

## Chapter 7 Preview

Types of problems you need to be able to do before the test.

From 7-1 & 7-2 extra practice on page 828 1-11

Simplify:

a)  $\sqrt{75x^9}$

$$\sqrt{25 \cdot 3x^4x}$$

$$5x^2\sqrt{3x}$$

b)  $\frac{\sqrt{18x^3}}{\sqrt{6}}$

$$\sqrt{3x^3}$$

$$x\sqrt{3x}$$

c)  $\sqrt[3]{-64a^4b^6}$

$$\sqrt[3]{-8 \cdot 8 \cdot a^3a^1b^6}$$

$$-2 \cdot 2ab^2\sqrt[3]{a}$$

$$-4ab^2\sqrt[3]{a}$$

Multiply:

a)  $(\sqrt{3}+5)(\sqrt{3}-5)$

$$3-25$$

$$-22$$

b)  $(\sqrt{2}-6)(\sqrt{2}-8)$

$$2-14\sqrt{2}+48$$

$$50-14\sqrt{2}$$

c)  $\sqrt{5x^7} \cdot \sqrt{2x}$

$$\sqrt{10x^8}$$

$$x^4\sqrt{10}$$

d)  $\sqrt[3]{4} \cdot \sqrt[3]{12}$

$$\sqrt[3]{2 \cdot 2 \cdot 2 \cdot 2 \cdot 3}$$

$$2\sqrt[3]{6}$$

e)  $\sqrt{3x^5} \cdot \sqrt{12x^6}$

$$\sqrt[3]{36x^{11}}$$

$$6x^5\sqrt{x}$$

From 7-3 extra practice page 828 15-20

Add or

subtract:

a)  $\sqrt{12} + 4\sqrt{75}$

$$2\sqrt{3} + 20\sqrt{3}$$

$$22\sqrt{3}$$

b)  $\sqrt{50} - 3\sqrt{32}$

$$5\sqrt{2} - 3 \cdot 4\sqrt{2}$$

$$5\sqrt{2} - 12\sqrt{2}$$

$$-7\sqrt{2}$$

From 7-5 extra practice page 828 29-34

Solve:

a)  $\sqrt{x+4} + 2 = 10$

$\sqrt{x+4} = 8$   $x = 60$   
 $x+4 = 64$

b)  $\sqrt[3]{5x-6} = 4$

$5x-6 = 64$   
 $5x = 70$   
 $x = 14$

c)  $x^{3/2} + 2 = 66$

$x^{3/2} = 64$   
 $x = 96$

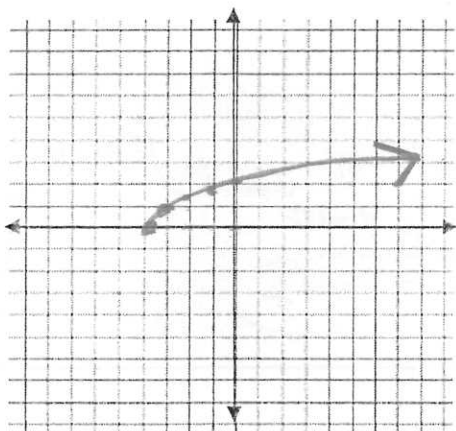
Graphing:

a)  $x^2 + y^2 = z^2$  solve for y.

$y^2 = z^2 - x^2$   
 $y = \pm \sqrt{z^2 - x^2}$

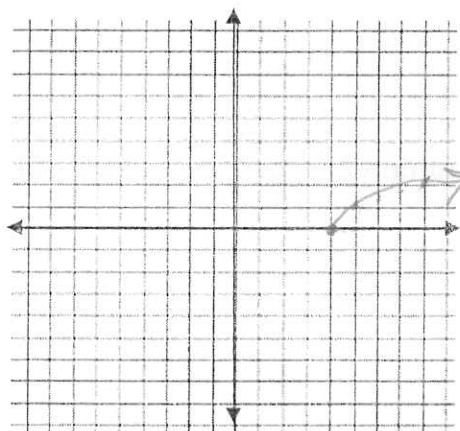
From sec 7-8 extra practice pg 828 50-58

Graph: a)  $y = \sqrt{x+4}$



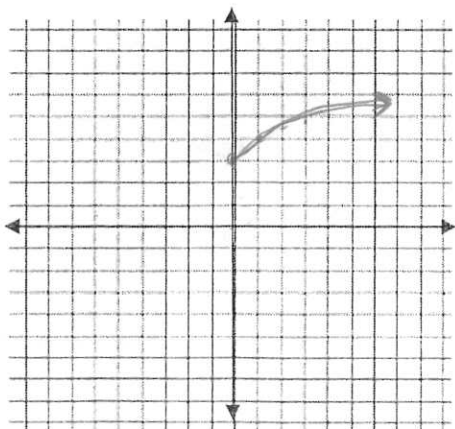
x	y
-4	0
-3	1
-2	1.4
-1	1.7
0	2

b)  $y = \sqrt{x-4}$



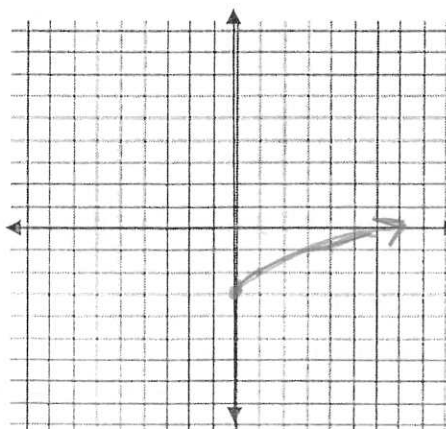
x	y
4	0
5	1
6	1.4
7	1.7
8	2

c)  $y = \sqrt{x} + 3$



x	y
0	3
1	4
2	4.4
3	4.7
4	5

d)  $y = \sqrt{x} - 3$



x	y
0	-3
1	-2
2	-1.6
3	-1.3
4	-1

-Write each expression using a radical symbol.

1.  $5^{1/2} = \sqrt{5}$

2.  $x^{-1/3} = \frac{1}{\sqrt[3]{x}}$

3.  $5^{2/3}$

$\sqrt[3]{5^2}$

Read the  
cubed root  
of five squared

-Write each expression using an exponent.

4.  $\sqrt{8^4}$

$8^{\frac{4}{2}} = 8^2 = 64$

5.  $\sqrt{x^5}$

$x^{\frac{5}{2}}$

6.  $1/\sqrt{n^2}$

$\frac{1}{n} = n^{-1}$

Solve:

7.  $\sqrt{8n-5}-1=2$

$$\begin{aligned}\sqrt{8n-5} &= 3 \\ (\sqrt{8n-5})^2 &= 3^2 \\ 8n-5 &= 9 \\ 8n &= 14 \\ n &= \frac{14}{8}\end{aligned}$$

8.  $\sqrt{7v-2}+12=7$

$$\begin{aligned}\sqrt{7v-2} &= -5 \\ (\sqrt{7v-2})^2 &= (-5)^2 \\ 7v-2 &= 25 \\ 7v &= 27 \\ v &= \frac{27}{7}\end{aligned}$$

9.  $(2x+1)^{2/3}=25$

$(2x+1)^{\frac{2}{3}} = 25 \rightarrow$

$2x+1 = \sqrt[3]{25^3}$

$2x+1 = 125$

$2x = 124$

$x = 62$

even: 2 solutions

10.  $3x^{2/3}=192$

$2x+1 = -125$

$2x = -126$

$x = -63$

13.  $x^{3/2}+4=68$

$x^{\frac{3}{2}} = 64$

$x^{\frac{3}{2}} = 64 \rightarrow$  odd: 1 solution

$x = \sqrt[2]{64^2}$

$x = 16$

14.  $3x^{1/2}+5=113$

$3x^{\frac{1}{2}} = \frac{108}{3}$

$x^{\frac{1}{2}} = 36$

$x = 1296$

Simplify.

1)  $\sqrt{81x^4}/\sqrt{3x^3}$

$$\frac{\sqrt{81x^4}}{\sqrt{3x^3}} = \frac{\sqrt{27x}}{\sqrt{3x}} = \sqrt{\frac{27x}{3x}} = \sqrt{9} = 3$$

2)  $\sqrt{25x}/\sqrt{5}$

$$\frac{\sqrt{25x}}{\sqrt{5}} = \sqrt{\frac{25x}{5}} = \sqrt{5x}$$

3)  $\sqrt{81x^9}/\sqrt{3x^4}$

$$\frac{\sqrt{81x^9}}{\sqrt{3x^4}} = \frac{\sqrt{27x^5}}{\sqrt{3x^4}} = \sqrt{\frac{27x^5}{3x^4}} = \sqrt{9x} = 3\sqrt{x}$$

4)  $\sqrt{80x^9}$

$$\sqrt{80x^9} = \sqrt{16 \cdot 5x^9} = 4x^4\sqrt{5x}$$

5)  $\sqrt[3]{81x^5y^9}$

$$\sqrt[3]{81x^5y^9} = \sqrt[3]{27 \cdot 3x^5y^9} = 3xy^3\sqrt[3]{3x^5y^9}$$

6)  $\sqrt[3]{-27a^5b^8}$

$$\sqrt[3]{-27a^5b^8} = -3ab^2\sqrt[3]{a^2b^2}$$

7)  $3\sqrt{12} + 8\sqrt{75}$

$$3\sqrt{4 \cdot 3} + 8\sqrt{25 \cdot 3} = 3 \cdot 2\sqrt{3} + 8 \cdot 5\sqrt{3} = 6\sqrt{3} + 40\sqrt{3} = 46\sqrt{3}$$

8)  $\sqrt{32} + 4\sqrt{72}$

$$\sqrt{16 \cdot 2} + 4\sqrt{36 \cdot 2} = 4\sqrt{2} + 4 \cdot 6\sqrt{2} = 4\sqrt{2} + 24\sqrt{2} = 28\sqrt{2}$$

9)  $(\sqrt{3} - 4)(\sqrt{3} + 8)$

$$3 + 8\sqrt{3} - 4\sqrt{3} - 32 = -29 + 4\sqrt{3}$$

10)  $\sqrt{14}(3 + \sqrt{2})$

$$3\sqrt{14} + \sqrt{28} = 3\sqrt{14} + 2\sqrt{7}$$

(not like radicands... can't + them together)

11.  $\sqrt{x+4} + 3 = 8$

$$\sqrt{x+4} = 5 \\ (\sqrt{x+4})^2 = 5^2 \\ x+4 = 25 \\ x = 21$$

12.  $\sqrt{3x-2} = 12+x$

$$3x-2 = (12+x)(12+x) \\ 3x-2 = 144 + 24x + x^2 \\ -3x+2 \quad +2 \quad -3x$$

$$0 = 146 + 21x + x^2$$

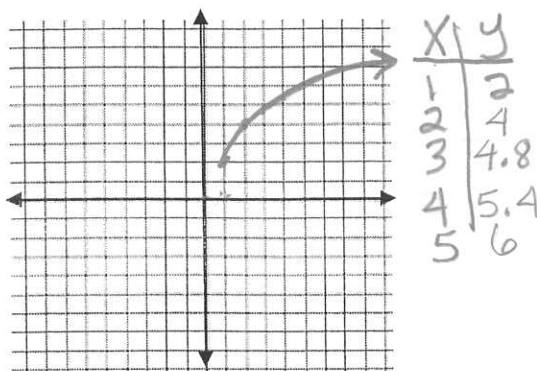
$$x^2 + 21x + 146 = 0$$

$$-21 \pm \sqrt{21^2 - 4(1)(146)} = \text{no real solution.}$$

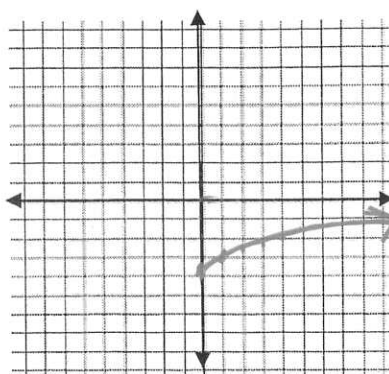
15. Solve for b in the equation:

$$a^2 + b^2 = c^2 \\ b^2 = c^2 - a^2 \\ b = \sqrt{c^2 - a^2} \quad (\text{This is finished!})$$

16. Graph:  $y = 2\sqrt{x-1} + 2$



17.  $y = \sqrt{x} - 4$



x	y
0	-4
1	-3
2	-2.6
3	-2.3
4	-2